THE VETERINARY JOURNAL

Editors :
T. DALLING, M.A., M.R.C.V.S.
J. McCUNN, M.R.C.V.S., M.R.C.S., L.R.C.P.

MARCH, 1944

EDITORIAL

SHEEP DISEASES AND SHEEP HUSBANDRY

THE attention of our readers is drawn to the reports of the Committees on Hill Sheep Farming, one covering England and Wales and the other concerning Scotland, abstracts of which are published elsewhere in this issue of THE VETERINARY JOURNAL. Both reports are of much interest and of great importance, for they show clearly the highly unsatisfactory conditions under which the sheep industry has been carried on, and recommendations for its establishment on a sounder and surer basis are made. While every section of the reports is of the greatest value to all interested in the raising of sheep (and we thoroughly recommend all our readers to study the reports in full), we as veterinarians are naturally more interested in the causation, nature and control of the diseases which affect hill sheep and which have a very direct bearing on the economics of the industry. The Committees lay considerable emphasis on the part to be played by the veterinary profession in the control of the many diseases. It is well to point out that our knowledge of diseases of sheep has improved within comparatively recent times to such an extent that we can surely claim that some of the important causes of heavy losses are now understood and can be prevented. It must be admitted that much of our study of the various diseases has taken the form of an investigation into a specific problem rather than a general consideration of items such as conditions of husbandry, etc., which may have a considerable bearing on the occurrence of the different diseases. While we agree fully with the view that the control of the health of sheep concerns workers in many different branches of science as well as men with experience of practical sheep husbandry, and while we support to the fullest extent the recommendations for close collaboration of all concerned in order to obtain a better understanding of conditions for the preservation of healthy sheep, it is right that we should acknowledge the part already played by the veterinary surgeon in the acquiring of present-day knowledge.

XUM

Diseases of hill sheep are being controlled to-day; the methods of control are the results of research work carried out largely by members of the veterinary profession. The specific causes of diseases, such as braxy, lamb dysentery, louping-ill, etc., are known and methods of control (the use of vaccines and sera) are being applied with satisfactory results. The losses in some districts have been markedly reduced following correct diagnosis of the diseases in the flocks and the application of the recommended method of control. Our knowledge of diseases associated with nutritional deficiencies and metabolic disturbances is gradually improving, and methods of supplying the necessary amount of the deficient element and of correcting the metabolic derangement are known is some respects and are the subject of study in others. Parasitic infestations (external and internal) have received and are receiving intensive study in this country, and methods of control are being practised daily. We cite these examples as evidence that considerable progress has already been made.

We welcome, however, the recommendations of closer collaboration among workers who can assist in the acquiring of a clearer understanding of the fundamental causes of many of the diseases of sheep, for we can foresee that by a concerted effort, involving a study of the root causes, it may be possible to prevent some of even the common diseases of sheep by simpler means.

The Committees rightly stress the importance of the application of knowledge based on the results of scientific studies and proved by controlled observations to be capable of practical use. The time has now arrived when it is necessary seriously to consider methods whereby the results of research work can be adopted throughout the country to the benefit of the various livestock industries. It will be seen from the reports under discussion that the two Committees differ in their recommendations on this subject so far as the control of diseases of sheep are concerned. In the report of England and Wales a "panel" scheme is envisaged, while in the Scottish report a Government Veterinary Service is recommended. In both recommendations it is clearly postulated that the control of diseases is the province of the veterinary profession.

XUM

General Articles

MARIE'S DISEASE (HYPERTROPHIC PULMONARY OSTEO-ARTHROPATHY). TWO FURTHER CASES IN THE DOG

By E. COTCHIN, M.R.C.V.S.,
Royal Veterinary College

FEW cases of Marie's disease (hypertrophic pulmonary osteo-arthropathy) in the dog have been recorded in this country, although the condition is more frequently mentioned in the European literature (see Innes, 1940; Craig and Davies, 1940). In this article, in which two more cases are described, further attention is directed to the salient features of the condition.

The disease, known variously as hypertrophic pulmonary osteo-arthropathy, hypertrophic osteoperiostitis, acropachia, or Marie's disease, is characterised by a slowly progressive and usually symmetrical thickening of the limbs, due to the formation of periosteal and sometimes endosteal osteophytes, and dense fibrous tissue which may be calcified in part. Several species may suffer, e.g., man, dog, fowl, horse, lion, deer. The limb bones are mainly affected, but other parts of the skeleton may be involved. The disease appears chiefly in the course of chronic conditions usually, but not always, involving the lungs. The cause of the periosteal and other changes in the limbs is not known, but they are generally agreed not to be tuberculous in nature (Innes, *loc. cit.*).

The general picture of symmetrical affection of the four limbs will serve to differentiate the condition clinically from neoplasia, while X-ray examination will show bony deposits around the shaft.

Case 1

Subject: Four years old Borzoi dog.

History: The dog developed during last winter what the owner described as a cold, which left it with a persistent cough. When examined by the owner's veterinary surgeon the dog was coughing, its temperature was 104.2 degrees F., and it showed painful swellings in the region of the carpal and tarsal joints; these swellings had been developing for some weeks. The dog walked very stiffly, showed some dyspnœa, and was in poor condition. The intradermal tuberculin test was performed, but gave a negative result. The dog was destroyed at the owner's request after it had been submitted to X-ray examination.

Post-mortem Examination: All four limbs showed firm swellings, most marked over the metacarpal and metatarsal regions, fading gradually upwards towards the elbow and stifle. The diameter of the limbs was increased up to about twice normal. The skin was slightly mobile over dense fibrous tissue, in which small calcified spicules could be felt. The bony material increased in amount towards the shaft of the bones, and the muscle tendons were in places almost completely enclosed in new-formed bone. Some of the boiled-out bones are shown in Fig. 1 (A and B). On the radius, the chief deposit of new bone was on the anterior surface; the lower end of the ulna, the outer aspect of the

XUM

carpal bones, the anterior surfaces of the metacarpal bones and the phalangeal bones all showed deposits. The tibia showed lesions on the upper inner surface, and the fibula on its lower third. The lower bones of the limb were rather heavily involved, especially the os calcis. None of the bones showed lesions involving the articular surfaces.

The main thickening of the limbs was due to dense fibrous tissue, in which small calcified and bony spicules were formed, but the periosteum was also very thick, and produced bony deposits on the shafts (Fig. 2).

The lungs of this dog showed lesions of tuberculosis. The left lung was pinkish brown in colour, very swollen, and had a translucent appearance, fluid running from the cut surface. Tuberculous lesions were present in both lungs, and some of these had small central cavities containing soft grey matter. The local lymph glands were slightly swollen. A few acid-fast organisms were seen in smears, and the tuberculous nature of the nodules was demonstrated in sections. By culture and by guinea-pig inoculation, a eugonic mammalian strain of tubercle bacillus was recovered, which appears to be of the human type, as after 18 weeks it has failed to kill a rabbit, which still remains in good health.

Case 2

Subject: Golden Spaniel bitch, aged seven years.

History: When taken to the owner's veterinary surgeon for examination it showed no symptoms other than firm swelling of the four limbs up to almost twice their normal size, which had been progressing for three months. The dog was destroyed at the owner's request after X-ray examination.

Post-mortem Examination: All four limbs were extensively involved. The appearance of the boiled-out limb bones, which have been roughly mounted for class demonstration purposes, is shown in Fig. 3.

In the posterior lobe of the left lung of this dog there was a nodule about 6 cms. in diameter, spherical in shape, quite firm, pale grey and fleshy on section. There was no well-marked capsule, but the surrounding lung showed pressure collapse, suggesting growth by expansion rather than by infiltration. Smears of this lesion, and guinea-pig inoculation, failed to show the presence of tubercle bacilli. In sections, the lesion appears to be either a tumour or a granuloma; it is composed of round and spindle-shaped cells, with very variable amounts of cytoplasm, which are grouped around a few capillary vessels. Poley and Taylor (1942) in America have described a case of Marie's disease in a dog associated with a bronchiogenic giant-cell tumour in the left lung, but in the present case, although the nature of the lesion suggests the possibility that it is a neoplasm, this is not stressed, bearing in mind the rarity of primary tumours of the dog's lung and the possible confusion with inflammatory processes.

Some objection may be taken to the different names applied to the condition, and it is suggested that it would be best at present to use the non-committal term "Marie's disease," after the man who first described it fully, waiting until the pathology of the condition is fully understood to form a name on correct principles.

Acknowledgment

These cases were examined clinically by G. C. Parker, Esq., M.R.C.V.S.,

XUM

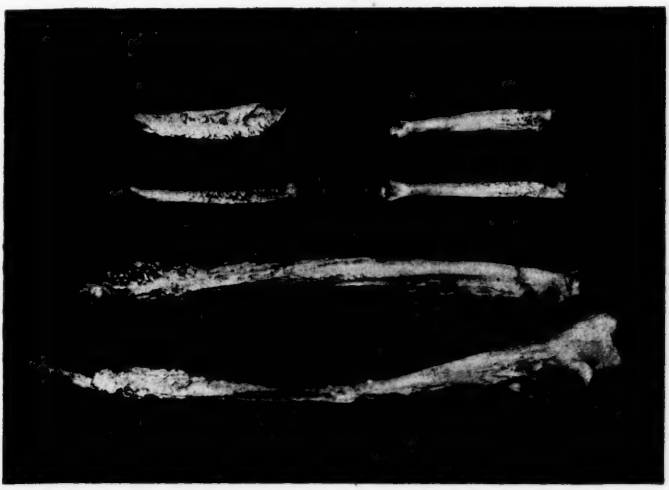

FIG. 1 (a). Case 1.—Radius, ulna, and four metacarpal bones.

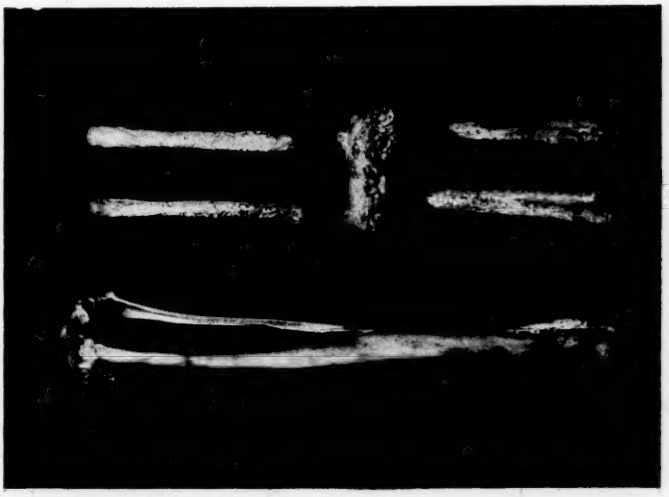

FIG. 1 (b). Case 1.—Tibia, fibula, os calcis, and four metatarsal bones.

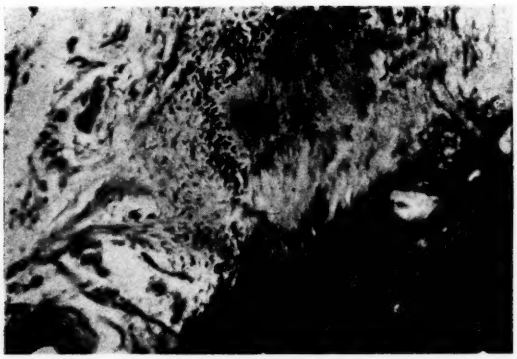

FIG. 2. Case 1.—Section of long lesion on metacarpal bone. Top left—dense compact normal bone. Bottom left —newly-formed bone. Centre—proliferating periosteum with active osteoblasts.

FIG. 3 (a). Case 2.—Left fore-limb.

FIG. 3 (b). Case 2.—Left hind-limb.

XUM

and Miss D. Williams, M.R.C.V.S., respectively, diagnosis being made during life in both cases by G. C. Knight, Esq., M.R.C.V.S., and confirmed by him by X-ray examination.

REFERENCES
Craig, J. F., and Davies, G. O. (1940) : *Vet. J., 96,* 339.
Innes, J. R. M. (1940) : *Ibid, 96,* 96.
Poley, P. P., and Taylor, J. S. (1942) : *J. Amer. Vet. Med. Ass., 100,* 346.

A STUDY OF THE POTENTIALITIES OF INTERNATIONAL COLLABORATION IN MEDICINE IN THE POST-WAR WORLD

By MELVILLE D. MACKENZIE, M.D., B.Hy., D.T.M., D.P.H.
(A Principal Regional Medical Officer, Ministry of Health; Chairman of the Medical Advisory Committee, Inter-Allied Committee for Post-War Requirements)

A summary of the Harben Lectures delivered in the Lecture Hall of the Royal Institute of Public Health and Hygiene, 28, Portland Place, London, W.1, on Monday, Tuesday and Wednesday, January 24, 25 and 26, 1944.

Lecture No. 1. *Monday, January* 24, 1944.

Before the War—Achievements asd Defects

It may well be that historians will recognise the present epoch as the first in which the interdependence of nations was generally realised, and in no sphere is this more true than in problems of health.

International medicine now illustrates to the whole world the mutual profit of collaboration between countries. As with thought, ideals, music and arts, we are dealing in the case of disease with an entity which cannot be limited by political or geographical frontiers.

Before considering the future of international collaboration in medicine we must have a clear idea of the history of the efforts made in the past, with a view to utilising in the future the experience gained from previous errors and successes.

After pointing out that up to the time of the Reformation medicine in common with all forms of knowledge was very largely international in character, Dr. Melville Mackenzie said :—

To-day we still see on every hand the results of nationalism in medicine. The standards of strength of therapeutic agents (drugs, sera, vaccines) vary with the different countries, so that the results of treatment cannot easily be compared. Forms of notification of death and the character of the information given on death certificates of various nations are so different in character that the national death rates for such diseases as cancer, tuberculosis, etc., are of little value for comparative research work. Even the study of clinical records of cases is complicated by the fact that in Europe alone there are three systems of recording temperatures (Reaumur, Fahrenheit and Centigrade), and the different national systems of weights and measures used in scientific work creates still further complexities. If all this is true of clinical work it can well be imagined how much more difficult is any comparison in research or in medical administrative methods and legislation.

As a single example, Dr. Mackenzie took the difference in strength of drug

XUM

preparations used in the ordinary treatment of illness as showing the practical importance of meeting this lack of standardisation by international collaboration. He mentioned how patients frequently found it difficult to get prescriptions made up when abroad. A similar problem existed with regard to the treatment of ships' crews calling at different ports and the replenishment of ships' medical chests. One result of variations in the strength and composition of medicinal preparations in different national pharmacopœias was that there was difficulty in investigating the comparative results of drug therapy of the same disease in various countries. The variations also tended to prevent the adoption of new methods of treatment by a country even when they had proved valuable elsewhere.

Dr. Mackenzie pointed out that the first world-wide international body to be set up for the prevention of disease was the Office Internationale d'Hygiene Publique. He traced the story of its origin, development and activities in some detail and showed that its achievements during the forty years of its existence were of a high order. At the outbreak of the present war the Office was sending epidemiological data to health administrations everywhere in the world. It was interesting to note that action under the Convention had resulted in most countries setting up machinery for the prevention and control of cholera, plague, yellow fever, smallpox and epidemic typhus, particularly in connection with ports and airfields.

He dealt with the Pan-American Sanitary Code and pointed out that the Pan-American Sanitary Bureau was in full operation at the present time.

He also discussed the Health Organisation of the League of Nations and pointed out that its work could be classified under the following headings :—

(a) Technical commissions and committees of experts.
(b) The collection of information from various countries, particularly with regard to disease incidence.
(c) Collaboration with various governments.
(d) Medical educational work, including collective study tours and international courses in public health subjects.

Dr. Mackenzie laid emphasis not so much on the scientific achievements of the Health Organisation as on the pioneer character of its work.

It can be fairly said that the principal achievement of the Health Organisation was the exploration of the possibilities of international collaboration in medicine, and any future international medical organisations must necessarily benefit by these early steps.

After discussing various handicaps and difficulties experienced by the Organisation and dealing with some of its defects, Dr. Mackenzie said that the principal difficulty of utilising it as a satisfactory world-wide international medical organisation was not on technical grounds, but was due to the lack of universality of the League, in spite of the facilities offered to non-member states to partake in the technical work of the League apart from the political.

Lecture No. 2. *Tuesday, January* 25, 1944.

In the Immediate Post-war Phases—Problems of Medical Relief

POST-WAR relief will offer a new opportunity for international collaboration in the solution of medico-social problems.

The necessity for utilising inter-governmental machinery in the solution of post-war medical problems can only be fully explained by reference to the character and scale of the factors now operating to produce a medical tragedy in the post-war period.

Dr. Mackenzie said that probably the most important single contributory factor would be the vast movements of many millions of people returning to their homes. With them they might bring serious infections hitherto unknown in the regions to which they were returning. The second most important factor would be the breakdown of agriculture. Another important factor would be the prolonged physical and mental strain under which large populations had been living in Europe during the war, particularly in industrial areas. Finally, through Europe generally a deterioration of health conditions was to be expected as a result of the shortage of doctors and nurses, the disorganisation of health services, and the decrease in the hospital facilities.

Broadly speaking, relief work would be required along the following lines :—

(1) Re-establishment of practitioners, hospital and public health services. Dr. Mackenzie said that in order to re-establish the medical services of each country medical supplies of all kinds would be required, and, in certain instances, personnel. The medical supplies could clearly only be provided if producing and recipient nations were willing to collaborate whole-heartedly. Perhaps the greatest difficulty would be that met with in replacing medical personnel, particularly in the countries of Eastern Europe. Not only would books and teaching material be required for the reopening of the faculties of medicine of the universities, but it was probable that at any rate in the early stages both professors and students would have to be fed. The medical supervision of students would be needed, particularly in connection with the prevention of tuberculosis.

(2) The control of epidemics. Dr. Mackenzie said that we had every reason to fear extensive outbreaks of typhus fever, malaria and waterborne diseases such as dysentery, illnesses of the enteric group, and possibly, in some cases, cholera. The first step in the control of these diseases was to establish some form of intelligence service to keep both the relief headquarters and each country informed of the occurrence and extent of the graver infectious diseases in all countries. Secondly, it would be necessary to co-ordinate the steps to be taken to check epidemics. Thirdly, a considerable quantity of material would be needed for the prevention and treatment of cases.

(3) Malnutrition. Dr. Mackenzie pointed out that malnutrition would vary in Europe from areas with insufficient calorie intake and supply of vitamins to districts with acute starvation. He suggested that good transport facilities were the key to relief as far as food was concerned. Only by the free and willing collaboration of countries themselves suffering from malnutrition would it be possible to carry out effectively the work of feeding distant countries, whether by sea or rail, as food supplies would have to be carried across the former.

(4) Repatriation. The medical problems in connection with repatriation would be the prevention of the transmission of disease to healthy populations through the large scale movements of displaced persons, the retention of those who

XUM

were medically unfit for the journey, and the treatment of the sick generally, and, where possible, the improvement of their state of health pending their repatriation. Dr. Mackenzie deliberately described in some detail the medical aspects of the vast problem of repatriation in order to illustrate how impossible it would be to carry out the necessary huge programme without creating and utilising an international body.

(5) Loan of experts. Dr. Mackenzie pointed out that Governments would probably require the loan of experts to assist in the control of special outbreaks of infectious disease. The choice of such experts could be made by an international organisation with infinitely less possibility of friction and suspicion arising than would be the case if such experts were supplied by an individual country.

(6) Provision of accommodation for orphan children. Dr. Mackenzie said that it was generally agreed that the ideal to be aimed at was to retain the child in its home and to provide institutional accommodation only in cases where this was absolutely essential.

The international approach is equally important in connection with both populations as a whole and individuals. For several years enemy propaganda has done its utmost to attribute ulterior motives to several of the Allied Nations, and relief work done by any of these nations must inevitably fall under suspicion in the warped minds of the recipients. This work should be done on an international basis, if this difficulty is to be obviated.

Dr. Mackenzie discussed in some detail the formation of the United Nations Relief and Rehabilitation Administration, its machinery, its functions, and its aims; and in conclusion he quoted some words spoken by the Director-General, Governor Lehman, a few months ago. Among other things, Governor Lehman said: "The task of healing the wounds of war will engage the full efforts of all the United Nations and of freedom-loving people everywhere. When our victorious United Nations' Armies complete the liberation of the suffering peoples, it will no longer be a question of how much we contribute out of our largesse to aid the starving and the sick, but rather how completely we are willing to share our limited joint resources to aid the sick and the starving."

Lecture No. 3. *Wednesday, January* 26, 1944.

As Permanent Machinery for the Prevention and Cure of Disease

Dr. Mackenzie said that in considering the creation of a permanent international health organisation the greatest emphasis should be laid in the first place on the importance of aiming at the highest standards in both the personnel selected and the work done. It was of fundamental importance that the heads of the national health services as well as technical scientific bodies should recognise any work done as being reliable. Such a high standard could be reached only if the direction of the work was entrusted to a doctor of accepted authority who had held responsible administrative posts. He discussed questions of salary; the nature of the staff; the utilisation of outside experts; and the need for thoroughness in work and accuracy of reports and memorandums.

XUM

The temptation to develop work along lines that are politically far in advance of what is possible at the present time must be resisted. It is relatively easy to draw up an ideal programme of international collaboration on paper, but unless the developments proposed are parallel with current thought, or at any rate only slightly in advance of it, success cannot follow.

Throughout all international work it should be constantly borne in mind that for success political action must be a tool in the hands of medicine, and not the reverse, as has too often been the case.

Dr. Mackenzie thought that there was much to be said from the medical point of view for a single international health organisation formed either by the absorption of the existing organisations in a larger body with wider scope, authority or finance, or by " loosely linking " these organisations together through the medium of a skeleton administrative group, after defining in detail their respective functions and scope of work. The latter was necessary if overlapping and waste of effort was to be avoided.

He pointed out that at the present time there was no international health organisation world-wide in character, covering all aspects of medicine, and politically acceptable to at least two of the most powerful countries. He thought that international medicine now stood in much the same position as public health work did fifty years ago in its relation to the old, purely clinical medicine. In both cases the new ideas had had to face the criticism of conservative opponents.

Dr. Mackenzie discussed the two policies which might be adopted in respect of international medical work and pointed out that whatever line was finally adopted some form of advisory health committee would be required to initiate, organise and generally supervise the work undertaken, as well as an executive staff to carry out the recommendations and decisions of the committee. The advisory committee should be of a strictly official character, the members being the heads of the national health services or their representatives. With regard to the executive staff itself, the choice would have to be most carefully made of any medical officers who might be responsible for the actual execution of the work in various countries. The ability to work as a team with doctors of nationalities other than their own was of the greatest importance. The most satisfactory solution would be to second medical officers from Government or local authority services for a considerable period, seven or ten years, with the possibility of prolongation of the period, but with a year's probation on first appointment.

Dr. Mackenzie concluded by saying: What machinery will in the end be best, when it can be set up, and what its scope will be are all questions which call for the deepest thought and discussion. The responsibility is very great, as on the wisdom of the decisions we now take will depend the welfare of millions. While giving full appreciation to work done in the past, we must not hesitate to criticise its defects and thus benefit from the mistakes made. It is only by the frankest co-operation between nations that the fullest use can be made of our neighbours' and our own knowledge and thus research be effectively co-ordinated, epidemics checked, and scientific and administrative knowledge pooled for the benefit of all.

XUM

"ILL FARES THE LAND"

By F. SYKES,
Chute, Andover

Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay.

—GOLDSMITH.

SOIL fertility has a close association with milk production: from a "healthy" soil we should be able to raise healthy plants which, in turn, will contain the essential products for life. Milk can be termed a product of the soil and in any system of food reform must receive due consideration.

To ensure that milk production is accomplished in as "pure" a method as possible, Nature's method should be copied as far as possible.

When a calf suckles its dam the milk never comes in contact with the air, and thus passes into the stomach of the calf free from microbic contamination contained in the air, and so food of the highest quality suited to infant digestion reaches the calf in its purest and most life-giving form, provided the udder is healthy.

Milk is probably the most valuable food available to mankind, but because of its peculiar composition is easily contaminated by bacterial attack. Its preservation can best be secured by allowing it to have a minimum of contact with the air, especially in cowsheds where the atmosphere is impregnated with bacteria arising from the presence of dung and urine in the litter on the floor, on the hair and skin of the cow, and on the teats and udder

To ensure that a minimum of contamination is present in milk it should be a regulation that all cows in dairies producing milk for human consumption should be machine-milked under vacuum, and *the milk cooled under vacuum.* By adopting such a method the milk can be drawn directly into sterilised churns without coming into contact with the air and can be kept free from contact with the air until the churns are opened at the dairy in London (the changing of the lids of the churns at the farm occupies only a few seconds on each occasion).

Thus milk could be delivered to a London dairy with a negligible bacterial count so far as contamination is concerned. Methods of bottling at the London dairy could also exclude contamination, and hence the milk could reach the consuming public in as pure a state as it is received by the suckling calf. By the adoption of such a method the need for pasteurisation of milk would largely be eliminated.

No farmer should be allowed to produce milk for human consumption except by these or equal methods.

Few, if any other, methods of milking approaches such a safe product as can be regularly delivered under vacuum cooling, and any existing milking machine can be converted at a trifling cost.

Farmers in the dairy business who still persist in hand milking should be compelled either to install vacuum coolers, or alternatively directed to feed the milk they produce to the rearing of calves, using the cow as foster-mother and feeding only through suckling.

Rearing calves by the bucket is unnatural and is not to be encouraged, because the milk is contaminated by air-borne bacteria which may be harmful.

XUM

It encourages the "gulping" of large quantities of milk by the calves, thus preventing the full action of saliva on the milk: this may result in indigestion, pot-belly, wind, arch-back and staring coat.

The buckets and utensils are not usually sufficiently sterilised by steam, and so the milk swallowed by the calves may contain harmful matter.

The most striking evidence is that nearly all our beef breeds suckle their calves; most of our dairy calves are bucket-fed; our beef breeds are often disease-free; 80 per cent. of the dairy animals passing through our markets are diseased; the milking-life of the beef cow is from 10 to 20 years; the milking life of the dairy cow is reduced to 2½ years.

These facts should be the subject of examination in any consideration of the production of milk for human consumption, But man does not live on milk alone.

Other features of farming are calling for remedy. The bearing of a "healthy" soil on some of the diseases of the human being is also of importance.

A healthy soil—which means a soil refertilised by natural organic manures and residues—will grow a healthy plant, which will probably have a considerable bearing on human health.

Several factors are operating against this method of fertilising: among them are the following:—

(1) The use of chemical fertilisers.

(2) The use of oil cakes and other concentrates for cattle instead of "natural" food in the shape of oats, peas and beans grown on the healthy soil of the farm.

To remedy this state of affairs what is needed is:—

(1) The return to the soil of some officially estimated TWENTY million tons of straw, muck and other vegetable refuse now lying on our farms, by composting processes using animal residues for their activation.

(2) An enlightened system of education for our farmers who are still unfamiliar with the virtues of new leys, where deep-rooting leguminous plants, mixed with deep-rooting grasses, are substituted for the old disease-ridden permanent pastures, and upon which by controlled grazing new fertility can be accumulated by the excrement and urine of the animals in the resultant bacterial activation.

(3) The universal use of the sub-soiler (where the soil is deep enough to admit of its use).

A few incidents from my own experience will emphasise the value of organic manuring which I advocate.

Twelve of the best ears of wheat were taken during the recent harvest from a field which had been sub-soiled and organically manured. Twelve ears were similarly taken from an adjoining farm where artificial manures and no organic manures were used. A chemist of repute in London gave the following certificate of the weights of the respective samples of grain:—

COMPARATIVE WEIGHTS OF GRAIN, AUGUST 11, 1943.

	Sykes	*C*
Weight of the whole of the contents of the packet	31.001 grams	26,625 grams
Weight of 50 grains, chosen at random ...	2.923 grams	2.390 grams

This shows there was a greater weight in favour of the ears grown on land organically manured by 21 per cent.

Last spring 50 of our milking herd were grazing a field which was fertilised naturally and they were yielding 110 gallons per day. Later they were driven into the adjoining field, a new ley, but artificially fertilised. In two days the milk dropped to 70 gallons per day. The two fields were alike in soil qualities and differed only in their systems of refertilisation. At one side of the artificially fertilised field the cows cropped the grass right down to the crown of the plants, while elsewhere no such close grazing was in evidence. The cowman drew my attention to this occurrence and asked me to explain the reason. Five years before a large pile of farmyard manure had been accumulated on that spot. As a result, the grass was sweeter and obviously more acceptable than the rest of the field.

In another field I observed the oats were growing with unusually long straw and were very thick on the ground. July rains came, and the crop at this point went down flat and was lost. Next year Little Joss wheat was grown and a similar occurrence was observed. A fallow followed, succeeded by swedes. Crossing this section of the field one morning with the foreman I observed that this patch, about an acre, was growing a very bad crop of swedes compared with the remainder of the field. I told the foreman what I had observed with the preceding crops and asked him if he could account for this very bad patch of roots where, in the preceding crops, there had been an excess of growth. "When we took over this farm in 1937 we found a bag of nitro-chalk in the barn. This is where we spread it. The oats grew to straw. The wheat, too, grew all to straw. Both crops went down and we lost them. Now we have lost the land. You can see it is beggared."

Another field of 30 acres I bought in 1937. It did not belong to the original estate, but it fitted into the property in a wedge-like shape. I bought it because of this, but I got it for next to nothing because for 20 years or more it had been lying derelict, just a home for rabbits, and utterly bare of vegetation, not even growing weeds. I knew I had bought some responsibility, and began by ploughing and cross-ploughing. Then I rolled it and sowed half a ton of basic slag per acre; then 20 lb. of Italian ryegrass and 4 lb. of rape per acre were sown. Nothing germinated. I have never seen land so dead that such initial treatment so completely failed. Realising that it was 30 acres of utter desert and therefore bereft of humus, I knew that nothing would ever be done with it until humus was put into it. I therefore put the whole milking herd in the field and took the milking bail there, keeping the cows in that enclosure for some three months and carrying food from the rest of the farm to feed the cows. In addition, large quantities of straw were littered all over the field which, mixed with the drop dung and urine, made "sheet compost" preparatory to being ploughed under. This was costly, but years of untold neglect necessitated this drastic treatment. In other words, when land is really "down and out" artificials will do nothing to restore life. Only "life itself," which is humus, can come to the rescue then. Since that time this field has had two heavy dressings of compost, has produced various crops, and this year grew ten acres of oats and vetches, seven acres of potatoes, six acres of mangolds (estimated

at 50 tons per acre) and a heavy crop of kale. At an altitude of 829 feet above sea level this 30 acres is to-day one of the most fertile fields in the county.

John W. Paterson, Professor of Chemistry, West of Scotland Agricultural College, says :—

"Fungus diseases, like rust in cereals and the notorious potato disease, find an easier prey in crops heavily manured with nitrogenous fertilisers. Manures are selected primarily with the object of securing maximum yields per acre, but it is well to keep in mind their secondary effects, particularly in regard to quality of produce and its susceptibility to disease."

Speaking of the effects of compost, he continues: "When plant and animal substances decay, the ultimate products are just those which are required by the green plant. Bacteria thus play an ESSENTIAL part in the CYCLE OF NATURE, and by their activity the effete matters of one generation are brought into general circulation for the use of the next."

R. H. Elliot, one of the greatest farmers of all time, says :—

(1) The cheapest food for stock is grass.
(2) The cheapest manure for soil is a turf composed largely of deep rooting plants.
(3) The cheapest, deepest, best tillers, drainers and warmers of the soil are the roots of plants.

(All, of course, grazing by the animal, the residues of which activate and recreate bacterial life.)

Sir John Lawes, one of the greatest chemists of his generation, who founded and endowed Rothamsted, said :—

"It is the physical condition of the soil, its permeability to roots, its power of absorbing and radiating heat, its power of absorbing and retaining moisture, that is of more importance than its, strictly speaking, chemical composition."

So spake the father of the artificial manure industry. He knew that artificials were not real food for the plant, but at best a "whisky and soda," and should be used with the utmost discrimination, ALWAYS KEEPING IN MIND THAT IT IS THE HUMUS CONDITION OF THE SOIL THAT IS OF PARAMOUNT IMPORTANCE.

Sir Albert Howard says: "A fertile soil is one rich in humus."

As a farmer, I say that one million tons of artificials applied to the land will not add one ounce of humus and therefore will not add to the soil's fertility.

From scientist and farmer alike evidence is accumulating that the present reckless use of artificials is depleting the reserves of humus in our land, is producing crops of a diminishing food value, which in turn is failing to build bodily resistance in both man and animal, the effect of which may have consequences of such a far-reaching character that this problem becomes second in importance only to the winning of the war itself by the United Nations.

What are we going to do about it?

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay."

XUM

Abstracts

REPORT OF THE COMMITTEE ON HILL SHEEP FARMING IN ENGLAND AND WALES*

REPORT OF THE COMMITTEE ON HILL SHEEP FARMING IN SCOTLAND†

THE two Committees, under the chairmanships of the Rt. Hon. Earl De La Warr, P.C., and the Rt. Hon. Lord Balfour of Burleigh respectively, have issued their reports. Both make interesting reading and throw a considerable amount of light on the difficulties of the sheep industry in Great Britain. Recommendations are made for an improved future industry. The reports must be read in full to appreciate the very detailed nature of the inquiries, which dealt with all aspects of sheep farming. The sections of greatest interest to our readers will undoubtedly be those dealing with diseases and their control. The following is a summary of paragraphs 67 to 74 of the England and Wales report dealing with health. Losses from disease are very considerable and, in some cases, are crippling, and there is presumptive evidence that the incidence of disease is rising. The increased incidence may be "associated with the deterioration that has taken place in hill grazings and with enforced changes in breeding and management." Reference is made to the advance in "determining the nature of, and in elaborating, preventive inoculations for the control of some of the major infectious diseases" for the past twenty-five years, and to more recent knowledge of parasitic gastro-enteritis and its control. The report says: "In the past the approach to the problems connected with disease has been too narrow, and more attention should be given to comprehensive studies of methods to produce a greater degree of positive health as well as to detailed treatments for specific diseases. Research into problems of disease among hill flocks should be greatly extended, but the purely veterinary approach must be closely linked with studies in pasture improvement, breeding and management."

Dealing with the need for wider application of existing knowledge in the maintenance of health and the control of disease in hill flocks, reference is made to the Veterinary Investigation Officer Service and to the lack of opportunity of practising veterinary surgeons to "exercise and develop their skill and knowledge in this field." The necessity for a system which "regularly and easily brings professional advice and help on to the hill sheep farms" is stressed. The work carried out by veterinary officers of the Ministry of Agriculture in collaboration with the Veterinary Investigation Officers is discussed and the Committee "believe it will contribute substantially to improving the health of hill flocks both by bringing additional skilled advice to the farmer and also by putting in a better relationship those diseases that are the subject of administrative action (e.g., sheep scab) and those that are not." The Committee feel, however, that "a more satisfactory solution might take the form

* Cmd. 6498, price 9d.
† Cmd. 6494, price 2s.

XUM

of a 'panel scheme,' designed on the lines somewhat similar to that recently arranged for the control of certain diseases of cattle." It is recommended that "the Ministry of Agriculture, the National Veterinary Medical Association and the National Farmers' Union should be invited to consider a scheme for the control of disease on hill sheep farms on the general principles of the cattle scheme and including adequate local laboratory service with specialists in diseases of sheep."

Another important section in the England and Wales report is contained in paragraphs 93-97, in which "research and its application" are considered. It is pointed out that there has been insufficient correlation with associated problems, which are the concern of other branches of agricultural science, researches usually having been directed from the specialist standpoint. The following quotation expresses the views of the Committee: "Work, whether in respect of research or its application, should be so controlled as to ensure the adequate integration of the different sciences concerned in the solution of any problem. Thus the most satisfactory control of a disease may be through the better nutrition of the sheep and therefore the provision of better herbage; alternatively, lack of thrift in a flock may be due to subclinical attacks by parasitic worms, and an improvement in food supplies may be ineffective without veterinary treatment of the parasitic infection. The Committee therefore attaches great importance to the organisation of work in such a way as to ensure that problems are examined from a wide, rather than a specialist, point of view. The knowledge and experience of groups of workers at existing research institutes and of persons experienced in hill sheep farming should be brought to bear on each problem. We recommend that discussions be instituted with the Agricultural Research Council with a view to the establishment of stations for the comprehensive study of hill sheep farming problems under co-ordinated direction, these stations to be for extending and testing research results applicable to hill sheep farming and to provide facilities for research workers to study problems bearing on such farming in a suitable environment."

In the Scottish report similar subjects are considered and recommendations are made. Diseases of sheep are dealt with in paragraphs 96-104 and in Appendix XIII. Attention is drawn to the widespread morbidity which has "contributed greatly to the lowered production of the industry, and the progressive deterioration of hill flocks" in addition to the mortality among lambs and breeding stock. Nutritional deficiencies are of much importance and may act in several ways, e.g., in the gross malnutrition during winter in certain districts; in disease due to mineral deficiencies in the pasture, e.g., cobalt deficiency as the cause of "pine"; by predisposing to microbic infection and helminth infestation. Attention is also drawn to specific diseases transmitted by the tick and losses due to myiasis, which in turn are indirectly attributable to pasture deterioration. Lists of the more important diseases found in different areas of Scotland are recorded. They were compiled from reports received from veterinary inspectors of the Ministry of Agriculture, and acknowledgment is also made of the information received from the Director of the Institute of the Animal Diseases Research Association and representatives of the National Veterinary Medical Association. It is stated in the report that "the recognition,

XUM

prevention and treatment of animal diseases is the immediate province of the veterinary profession," and reasons are given to account for the fact that "little has been done in Scotland towards the application of veterinary science in controlling sheep diseases." The following quotations from the report are made as examples of such reasons: ". . . the average sheep farmer has not used, or been able to use, the direct personal services of private veterinary practitioners, thus ensuring the accurate diagnosis of prevalent diseases and technical advice regarding preventive or remedial measures." "The expense of private veterinary service is often beyond the means of many hill farmers, especially those in areas far removed from a centre where there is a practising veterinarian." "In view of the scanty contacts between practitioners and hill sheep farmers, knowledge and experience of sheep diseases among the veterinary profession has been somewhat restricted, and this in turn has made farmers less confident in seeking their assistance." "Flockmasters have also learned the technical application of certain remedies, for example, the injection of vaccines and sera, and while this is all to the good and while it would be impracticable in general for veterinary practitioners to do such work for them on any scale, the practice has made sheep farmers more independent of the practitioner and remedies are used without expert advice or guidance." "The failure of preventives or remedies incorrectly used has frequently created strong prejudices and mistaken ideas, and this has retarded progress." "Another factor which limits the full use of preventives is their expense. . . ."

Research is dealt with in paragraphs 178-188. The Committee refer to the need for expansion of research, and after acknowledging that hill farming has already benefited by the results of scientific methods (of which examples are given), it is stated that "there remains great scope for organised research related directly to the problems of the industry." The following are the headings given (under each heading are details of the subjects for research): the improvement of hill pastures and the marginal land of hill farms; physiology, nutrition and genetics of hill sheep and their husbandry; causation and control of disease, including the control of parasitic infestation; the economics of farm organisation and management.

The Committee expresses its keenness in the co-ordination of research and recommend the formation of a permanent Hill Farm Sub-Committee of the Agricultural Improvement Council with the following duties: to keep in touch with the progress of scientific research on the specific problems affecting hill sheep farming, etc., and to advise the steps to be taken to test promising results; to expedite the incorporation into ordinary farming practice of new knowledge proved to be generally applicable; to review agricultural problems needing scientific investigation or increased scientific attention.

The Committee recommends "the establishment of a Hill Farming Research Station in which facilities would be available for the direct and intensive investigation of problems through the co-operative efforts of a group of scientific workers." It is stated that "this field station should have an intimate relationship with the research institutes and maintain contacts with the universities and colleges so that it could bring together in particular investigations additional scientfic workers seconded from other institutions."

XUM

Veterinary services are discussed in paragraphs 189-207. Following a description of the present veterinary services, viz., private veterinary practitioners, Highlands and Islands Veterinary Service, Veterinary Investigation Officers, the Institute of the Animal Diseases Research Association, Veterinary Education and the Animal Health Division of the Ministry of Agriculture, the need for improved veterinary services is emphasised. The following is the recommendation of the Committee: "We recommend the setting up of a Government veterinary service, veterinary surgeons being employed whole-time by the Department of Agriculture and allocated to districts throughout the sheep farming areas, thus each officer would undertake the veterinary care of the flocks of a given number of farms and live within easy access of the farms allotted to him." It is further recommended that "an annual contribution, determined on some equitable basis, would be made by the farmer for such veterinary assistance. . . ." It is pointed out that this scheme "would impinge on private veterinary practice," and it is stated "this proposal for a Government service would be applicable to all forms of livestock and we are inclined to suggest that the time has come to deal with the veterinary services of agriculture as a whole, rather than piecemeal. In the more prosperous branches of agriculture private veterinary services are often freely used and can be remunerated in the usual way by the farmer himself. On the other hand, such expense must always tend to inhibit the full application of veterinary science to agriculture, and the plan we recommend in the interests of sheep farming may well be extended to all stock farming, the sheep farmer participating in its benefits."

Both reports are published by His Majesty's Stationery Office.

BRUCELLOSIS IN INDIA*

By J. B. POLDING,

Research Officer, Imperial Veterinary Research Institute, Mukteswar

(*i*) *On organised farms.* It is not proposed to give a list of places in India where Brucellosis is present, it being sufficient to state that this disease can usually be detected on almost any organised farm in the country. It may also be added that where European blood is present and conditions of animal husbandry are favourable the annual average loss of calves will be in the neighbourhood of 3 per cent. In well-run indigenous herds in good climates, on the other hand, the average loss may be less than 1 per cent., while in thoroughly bad conditions the annual loss of calves amongst any type of animal may be as high as 25 per cent.

(*ii*) *In village or* desi *cattle.* It is impossible to give accurate figures for actual abortion rates amongst village cattle, as no records have been kept. It is probable, however, that Brucellosis in this class of stock is common in Bengal and Assam; it is certainly common in Orissa, eastern and central Madras, in the eastern and central parts of Central Provinces, and in the south-eastern parts of Hyderabad State. It appears to be rare on the Deccan plateau. The survey of villages north of the line from Bihar to Bombay is not yet complete.

* Reprinted from *The Indian Journal of Veterinary Science and Animal Husbandry*, Vol. XIII, Part 1, pp. 27-34, March, 1943.

XUM

Conditions Governing the Spread of Brucellosis in India

It is, of course, quite impossible to assess accurately all the factors affecting the spread of Brucellosis, but the following are probably the most important in India: (1) the magnitude of existing reservoirs of infection, (2) the magnitude and direction of cattle movements, (3) the prevailing conditions of animal husbandry, (4) the climate and (5) the phasic susceptibility of animals. It is the writer's opinion that, when factors (3) and (4) are favourable, the magnitude of existing reservoirs, even when cattle movements are considerable, is insufficient to cause a large increase in abortion in India. The gravest possible cause of increase in sources of infection would be, undoubtedly, an increase in the importation of foreign cattle or an increase in cattle movement from villages on the Eastern Seaboard of the Indian peninsula. There is also danger of a further spread of infection from an increase of cattle movements from a few special areas such as Calcutta or Bombay. Actually, at the present time, where animal husbandry has been improved or is improving and the climate is good, the existing reservoirs seem hardly sufficient to maintain themselves. When conditions of animal husbandry and climate are bad, however, the smallest reservoir is probably sufficient to spread infection. As regards animal husbandry, at present there seems to be no evidence that ill-balanced cattle feeding *per se* plays an important role in the spread of Brucellosis. Indeed, it is well known that some of the best-fed herds are the worst infected. Nevertheless, it is believed that the contamination of food, especially cut green fodder, by animal secretions may play some part in the spread of this disease. The branch of husbandry that is most likely to affect the spread of Brucellosis in cattle is, undoubtedly, the hygienic conditions of the animal's environment. Animals kept in semi-ranch conditions or in sanitary quarters, with proper drains and maternity wards, are obviously less exposed to infection than those that are not. With regard to climate, it is obviously much easier to keep quarters hygienic in sunny, dry climates than in places with less sunlight and a high rainfall. Indeed, it is believed that one of the most important factors affecting the spread of Brucellosis is humidity and lack of sunlight, a belief based on the following considerations:

(1) The exposure of the Brucella organism to direct sunlight results in automatic sterilisation within an hour or two. In general, sun-baked surfaces are more easy to keep clean than those that are wet or muddy. (3) In dry climates animals can usually spend more of their time out-of-doors, and this avoids the dangers of overcrowding. (4) In good weather there is less likelihood of animals becoming chilled.

Weight is lent to the validity of this belief and to the importance of hygienic surroundings by the following observations: (1) The diminution of infection in the Punjab Grantee herds during the period that they have been self-contained, well-managed units, run on semi-ranch conditions. (2) The diminution of infection on the military dairy farms, which runs parallel with the improvement of buildings and the erection of maternity wards in these institutions. (3) The distribution of village infection in South India, which is in general greatest on the humid east coast and least on the arid Deccan Plateau. (4) The fact that during the four rainless years at Hissar, abortion in the Government farm was 50 per cent. less than in the six previous years of normal rainfall. (5) The

XUM

extraordinarily high incidence of infection in buffaloes in farms around Bombay.

Item (5) requires a little elaboration. In a certain buffalo farm near Bombay the annual abortion rate for the last five years has been 25 per cent. of the total breeding stock. This is by far the highest abortion rate yet encountered in India; much higher indeed than the highest rate observed amongst delicate European stock, and some explanation of this unusual state of affairs is needed. Apparently, the reason is that in this part of the country buffaloes breed seasonally, i.e., the majority calves in the *post-monsoon* month of September. Animals, therefore, are liable to abort from May onwards. Actually, however, most of the abortions occur in August, and the wave of abortions coincides with the occurrence of the monsoon, during which all animals are closely confined, sometimes for weeks on end, in warm, humid stables, some of which have mud floors. It is hardly surprising, therefore, that in these conditions a disease should assume exceptional proportions.

The last factor thought to affect the spread of Brucellosis is phasic susceptibility, but, owing to the short duration of the present researches, it is not possible as yet to estimate the importance of this influence.

The Diagnosis of Brucellosis

Two methods of diagnosing Brucellosis are described in detail in the appendices, but this opportunity may be taken to clear up some misconceptions concerning the Brucella agglutination test.

The fundamental facts governing the use of this test are probably as follows. Shortly after its invasion by Brucella, the host develops a response which is detectable by the agglutination test. Unfortunately this response is often inconstant in degree, time of appearance and duration. This inconstancy is probably governed by the time of ingress of infection in relation to pregnancy, and by the amount of hold the infection is able to gain over the host. Experimental records have enabled reactors to be divided into two classes, viz., "constant reactors" and "inconstant reactors." The "constant reactor" responds within a short period after infection by producing in its serum a high agglutinin titre, and this persists for several years, subject to a slow over-all decline. The "inconstant reactor" responds with a low fluctuating serum titre, which may appear, disappear and reappear at irregular intervals for several months after infection. Experimental observations engender the belief that in an average outbreak of Brucellosis 50-60 per cent. of infected animals will be "constant" and 40-50 per cent. will be "inconstant reactors." It follows that, if all infected animals are tested once at random, all the "constant," but only a few of the "inconstant reactors," will be discovered; or, in other words, a single random test will have an accuracy of not more than 60 per cent. In the same way, a single random test of an infected individual animal will only reveal infection in 60 out of 100 cases. On the other hand, if it is possible to test all infected animals once weekly during the year succeeding infection, then during one or other of these tests almost all "inconstant reactors" will be in a reacting phase and consequently almost 100 per cent. of infected animals will be detected.

However, it is seldom possible to test herds more often than once in six months, if as often, and it follows that some 40 per cent. of infectious animals

XUM

are escaping diagnosis. For this reason, any system of eradication based on infrequent tests is doomed to failure. This is experience with well-regulated European herds which, in spite of being tested every six months, with vigorous disposal of reactors, still show fresh reactors at succeeding tests. Such systems of testing will minimise but rarely eradicate infection, and when, as is often the case, they cause great inconvenience, they seem of little practical value, especially if equally good results can be obtained in other ways.

The value of the agglutination test is therefore limited, and its chief use is to diagnose Brucellosis as the cause of an outbreak of abortion and to give some idea of its extent. Consequently, when an abortion enzootic occurs, all or at least a representative number of the herd should be tested, and if the result confirms the diagnosis of Brucella infection the appropriate steps for its control can be inaugurated. This, apart from experimental and other special work, such as vaccination, appears to be the beginning and end of the usefulness of the test.

Control of Brucellosis in India

From what has been said above, one method of control of Brucellosis in India becomes at once apparent, viz., a system based on the practice of hygiene. Such a method is fully explained in Appendix VI, and in the same appendix reasons are given for the discontinuance of systems based on test and slaughter test and disposal, and test and segregation.

Another system is becoming increasingly popular overseas, namely, vaccination, but as its practice has only lately been taken up seriously in India it is not yet possible to give details of the method. For general guidance, however, it may be said that the method of vaccination at present in vogue consists of a single subcutaneous injection of 5.0 c.c. of a saline suspension of low virulent strain of Brucella organisms. The most suitable subject for vaccination is the calf or the heifer, and vaccination is mainly recommended in badly infected herds maintained under adverse conditions. In certain circumstances adult animals can be vaccinated. At present, nothing can be said as to the duration or degree of protection offered by this form of immunisation in India, but from reports of overseas experiments it appears that, given the right circumstances, an annual abortion rate of, say, 20 per cent. can be reduced to about 3 per cent. Up to the time of writing, between two and three hundred animals have been vaccinated in India, and so far no unfortunate sequelæ have been observed. The immediate reaction to the injection is a slight rise of temperature on the second and third days, together with a local swelling at the site of injection, which is rarely larger than a man's hand and which disappears completely in a week or 10 days.

Reviews

Department of Agriculture, Canada: Report of the Veterinary Director-General, year ended March 31, 1943. Ottawa: Edmond Cloutier.

THIS report is made up largely of a mass of tables and figures and is a reflection of the amount of work done by the Veterinary Department.

XUM

Some of the points which will interest the reader in the United Kingdom are: no cases of anthrax, glanders, mange in horses or sheep scab were reported during the year. Under heading "Tuberculosis: Area Testing," 998,364 cattle were tested, of which number 11,079 reacted, a percentage of 1.1, a small incidence when compared with results in our home herds.

In the Meat and Canned Food Section, exports show a considerable rise. A total of 8,508,651 carcasses were marked "Canada Approved," 32,919 were condemned and portions of a further 4,114,437. Of the latter, 3,559,616 were from swine. The main causes of carcass condemnations were tuberculosis, cattle 43.40 per cent., swine 39.31 per cent.

Staff shortage would appear to cause difficulties in Canada, as elsewhere, and those who are at work must be congratulated on overcoming such an immense task.

Annual Report of the New York State Veterinary College for year 1940-41. Pages 18 and 179-181.

DONALD W. BAKER, of the New York State Veterinary College, reports that dried yeast proved to be the means of saving the lives of two calves carrying enormous numbers of intestinal parasites. The calves were taken from a herd in which other calves had died, and these animals were thought to have no chance of surviving. They were so weak that the usual methods of inducing appetite failed. Dried yeast was given and taken ravenously. They quickly gained strength on yeast with which other foods were mixed gradually. When the yeast supply ran out the animals could not be induced to eat until more yeast was obtained. Finally the animals were able to withstand anthelmintic medication and made a complete recovery.

Obituary

LIEUT.-COL. W. S. MULVEY, O.B.E., T.D., F.R.C.V.S.

WILLIAM SNOWBALL MULVEY died on Monday, February 7, at his residence, Skansen, Baddow Road, Chelmsford. He was the son of the late W. J. Mulvey, F.R.C.V.S., who was the treasurer of the Royal College of Veterinary Surgeons for a long time. He was born on March 31, 1876, at Bishop Auckland in Durham, where his father was then in practice. His father came to London and it was in Chelsea that William was brought up. He was educated at St. Mark's College, Chelsea, and at Cranleigh. He entered the Royal Veterinary College, took his final in 1896 but, being under age, he did not receive his diploma until March 31, 1897. He subsequently obtained his fellowship on May 10, 1902. When he qualified he entered his father's Chelsea practice and immediately began to take an interest in the local Veterinary Society, and served as secretary to the Central. In 1900 he relinquished the post, for he volunteered for service in the South African War. He was accepted by the City of London

XUM

Imperial Volunteers as Veterinary Lieutenant and proceeded to Africa. In due course he returned, was present at the many civic functions in celebration of the regiment's return, and was made a Freeman of the City of London. This period of military service evidently aroused some inward urge, and it was not long before he was again in Volunteer's uniform as a Second Lieutenant in the Victoria and St. George's Rifles. Throughout his life this call for military service was most marked—in fact, it grew with age. When the Territorial Army was initiated by Lord Haldane to replace the old Volunteer Force, we find him transferring to the Royal Engineers of the London Division, and this branch of the Service claimed his loyalty until his retirement in 1934, when he was well over the age limit. He attained the rank of Lieutenant-Colonel and was a member of his County Territorial Association. He served in the Great War of 1914-1918 in France and was in command of a Field Company at Hill 60, and his company distinguished itself in that great epic. Shortly after this he returned to England, owing to ill-health, and his subsequent service was in this country. After the Great War he was asked by the War Office to raise and command the 108th E. and M. Company of Engineers (Supplementary Reserve). This was his great work, and he set about it with intense enthusiasm. He took over the old prison in Chelmsford, recruited officers and men, and in a remarkably short time produced one of the best units in the Services. His officers and men were either professional engineers or mechanics, and it says much for Mulvey that he, a man whose profession was the exact opposite to that of the men he commanded, could do so and gain their esteem and affection. No doubt he was helped greatly by the fact that in virtue of his Volunteer training he was a good military engineer. As an illustration of this, I remember sitting with him watching a sea-wall being built. He tried to take no notice, but after one day's observation he could rest no longer and he had to go to the men and point out that they were going about the job in such a way that the first moderate sea would wash it away. As he was insistent the engineer arrived, and although at first the latter was somewhat off-hand it was not long before he came to Mulvey's way of thought, and the set-out was altered accordingly. Being a bystander, it was amazing to me to see the cut and thrust between these two in a highly technical jargon, in which Mulvey appeared the most adept. I think these engineers had a greater respect for veterinary surgeons afterwards. Now, the raising, equipping and training of this S.R. unit became almost an obsession, and he spent on the job every minute which he could spare from a very busy practice. It was not long before the old prison was not good enough for his army, and we saw arise in Chelmsford one of the finest depots and drill halls in the whole country. It will be an enduring monument to his great work. When the time came for his retirement he was honoured by His Majesty, who awarded him the O.B.E. Although Mulvey was possessed of a great and abiding desire to serve his country as a soldier, and was of a physique and temperament to succeed in this line, he never forgot that he was a veterinary surgeon, and he was a good veterinary surgeon, ever loyal to his profession and to its governing body, the Royal College of Veterinary Surgeons, and was always prepared to give of his time and ability in its service.

In 1910 he purchased the practice of the late Nicholson Almond at Chelms-

XUM

Lieut.-Colonel W. S. Mulvey, O.B.E., T.D., F.R.C.V.S.

ford. This was subsequently extended and ranked amongst the best. He held appointments under his municipal and local authorities and also under the Ministry of Agriculture. He served the Royal College of Veterinary Surgeons as an examiner, first in Stable Management and then in Surgery. He was impatient of any chicanery and some students would approach him with misgiving, but, like his friend Hicks, his bark was worse than his bite, and he was always prepared to help the lame dog at the sum up. I think that this fact should be put on record both as regards Mulvey and Hicks, for neither were men who courted popular favour or played to the gallery, and both have been misjudged in some quarters. In 1934 he was elected to serve on the Council of the Royal College of Veterinary Surgeons, and although he was never in great evidence as a speaker in full Council, he was a good and sound committeeman. His technical knowledge was especially valuable to the House Committee.

Mulvey was born with the disadvantage of having an illustrious father, yet in spite of the handicap of being called for the greater part of his life "young Mulvey" he carved his own destiny and made good.

Now as to the man, he was a tall, spare, big-boned man with large blue expressive eyes, who carried a good colour and was an inveterate pipe-smoker. A great reader, he would sit with his books well into the early hours. Sharp in speech, very critical, his time, probably due to his military training, was so regulated that you could tell where he was or what he was doing at any period of the day. A family man of Victorian type who kept a good table, was an expert carver, he liked to entertain guests and rarely returned home without some little gift for someone. In spite of his critical manner, sometimes severely sarcastic, he attracted others to his side, and if in the course of time you gained his approbation he was the most loyal of friends; if the opposite was the case, he would never shrink from telling you what he thought of you, often in no uncertain language.

He was a hard worker and his custom was to be away on his rounds of visits by 8.30 o'clock; come what may he always was on time for appointments. He was always smartly, yet modestly, turned out, and for his working hours wore well-cut breeches and leggings. For years he drove the old type Ford car, cruising along at a steady 20-25 miles an hour, smoking his pipe and with several reserves ready filled. It was a great blow to him when this type of car was no longer available, for in spite of his great knowledge of engineering he could never master the gate change gear, and perforce had to be chauffeur-driven in his latter years. He was a man of great courage and yet gentle and kind. As illustrating this the following incident can be quoted. A large D.A. bomb fell in a yard next to his house. The district was cleared and remained so for a week or so, and roped off for an area of at least 500 yards. Mulvey remembered his cats. He went back to the house to release them, and daily, in spite of police protests, went into the premises to take them milk and meat. A great example of cool courage.

I think that the man Mulvey was well summed up by the Rev. L. C. Blower, who officiated at the funeral service in Chelmsford Cathedral:

"Col. Mulvey was a man who faithfully served his King and country in

his day and generation, and discharged his duty to the best of his ability. No man can do more; not all do so much."

His old soldier comrades bid him farewell at the grave, confident that whatever may be beyond the veil, their old Colonel will face it with the same courage and sense of duty that he showed in life. He left a widow and two daughters.

His decorations were: O.B.E., T.D., the King's South African Medal with five bars, the 1915 Star, Great War and Victory Medals, and King Edward Coronation Medal. J.McC.

Publishers' Notices

Copy of advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 1st of the month, if proof is required.

Letters for the Journal, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Binding Cases for Volume 99 and any previous volumes can be obtained from the Publishers. Price 3s. 9d. post free.

Annual Subscription, 25s. ($6.00 U.S.A. currency, post free.)